Digital I/O

UCERB 08

USB Electromechanical Relay Module - 8 SPDT (Form C) Relays, with 24 Screw Terminals

USER'S MANUAL

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CyberResearch®, Inc.

www.cyberresearch.com

25 Business Park Dr., Branford, CT 06405 USA

203-483-8815 (9am to 5pm EST) FAX: 203-483-9024

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25 Business Park Drive
Branford, CT USA
P: (203) 483-8815; F: (203) 483-9024
www.cyberresearch.com

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About this User's Guide

What you will learn from this user's guide

This user's guide explains how to install, configure, and use the UCERB 08 so that you get the most out of its electromechanical relay features.

Conventions in this user's guide

For more information on …

Text presented in a box signifies additional information and helpful hints related to the subject matter you are reading.

Caution! Shaded caution statements present information to help you avoid injuring yourself and others, damaging your hardware, or losing your data.

<#:#> Angle brackets that enclose numbers separated by a colon signify a range of numbers, such as those assigned to registers, bit settings, etc.

bold text **Bold** indicates names of objects on the screen, such as buttons, text boxes, and check boxes. For example:

1. Insert the disk or CD and click the **OK** button.

italic text *Italic* text indicates the names of manuals and help topic titles, and to emphasize a word or phrase. For example:

- The *Insta*Cal® installation procedure is explained in the *DAQ Software Quick Start*.
- *Never* touch the exposed pins or circuit connections on the board.

Introducing the UCERB 08

Overview: UCERB 08 features

This user's guide contains all of the information you need to connect the UCERB 08 to your computer and to the external devices you want to control. You can use the UCERB 08 in your control applications to switch on and off a variety of devices, such as fans, blowers, pumps, etc.

The UCERB 08 is a USB 2.0 full-speed, electromechanical relay module. It is supported under Microsoft® Windows® 98 (2nd edition), Windows ME, Windows 2000, and Windows XP.

The UCERB 08 provides eight single-pole double-throw (SPDT) Form C electromechanical relays. The digital I/O lines on your USB module directly control the relays on your UCERB 08.

You connect your field wiring directly to the board's screw terminals. The screw terminals provide three connections to each relay – normally open (NO), normally closed (NC), and common (C).

You configure the relay control logic polarity and the relay power-on state with on-board switches. The relays are configurable as two banks of four. Switch settings can be read back with software.

The UCERB 08 is powered by an external 9 V, 1 A regulated power supply that is shipped with the device. A USB cable is also included. Power OUT and USB OUT connectors let you power and control multiple UCERB/ boards from one external power source and one USB port in a daisy chain fashion. Depending on your load requirement, daisy chained boards may require a separate power supply.

The UCERB 08 is shipped in a rugged enclosure that you can mount on a DIN rail or on a bench.

UCERB 08 block diagram

UCERB 08 functions are illustrated in the block diagram shown here.

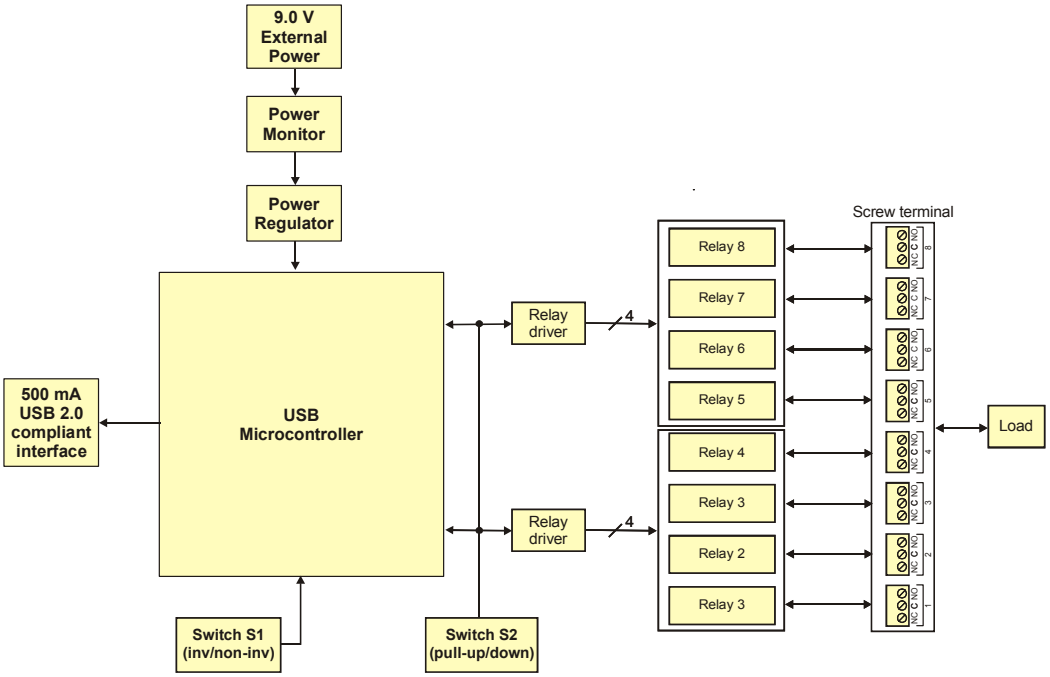


Figure 1-1. UCERB 08 functional block diagram

Software features

The following software ships with the UCERB 08 free of charge.

- *Insta*Cal installation, calibration, and test utility

Connecting a UCERB 08 to your computer is easy

Installing a data acquisition device has never been easier.

- The UCERB 08 relies upon the Microsoft Human Interface Device (HID) class drivers. The HID class drivers ship with every copy of Windows that is designed to work with USB ports. We use the Microsoft HID because it is a standard, and its performance delivers full control and maximizes data transfer rates for your UCERB 08. No third-party device driver is required.
- You can connect the UCERB 08 before or after you install the software, and without powering down your computer first. When you connect an HID to your system, your computer automatically detects it and configures the necessary software. You can connect multiple HID peripherals to your system using a USB hub.
- You can connect your system to various devices using a standard four-wire cable. The USB connector replaces the serial and parallel port connectors with one standardized plug and port combination.
- Data can flow two ways between a computer and peripheral over USB connections.

Installing the UCERB 08

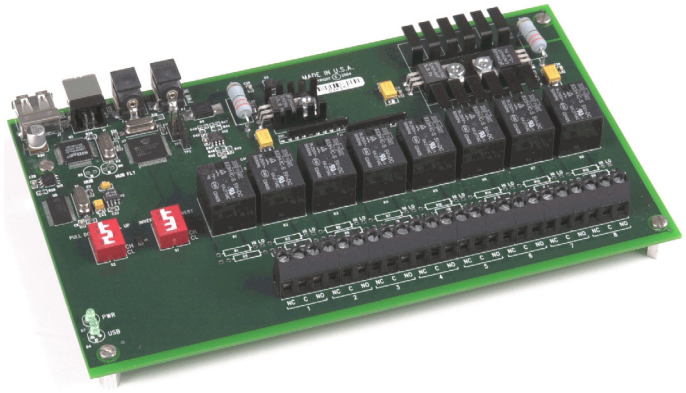
What comes with your UCERB 08 shipment?

The following items are shipped with the UCERB 08.

Hardware

The following items should be included with your shipment.

- UCERB 08



- External power supply and cord - 9 volt, 1 amp DC power supply

- USB cable (2 meter length)

Software

The *Software* CD contains the following software:

- *Insta*Cal installation, calibration, and test utility

Unpacking the UCERB 08

As with any electronic device, you should take care while handling to avoid damage from static electricity. Before removing the UCERB 08 from its packaging, ground yourself using a wrist strap or by simply touching the computer chassis or other grounded object to eliminate any stored static charge.

If your UCERB 08 is damaged, notify CyberResearch, Inc. immediately by phone, fax, or e-mail.

- Phone: 203-483-8815
- Fax: 203-483-9024 to the attention of Tech Support
- Email: techsupport@cyberresearch.com

Installing the software

Installing the software is very basic: insert software CD and follow prompts on screen.

Installing the UCERB 08

The UCERB 08 has two on-board switches that you set to configure the relay logic polarity and the resistor pull-up/down configuration. Configure these switches before you connect the4 external power supply to the UCERB 08. Factory-configured default settings are listed in the table below. Refer to Figure 3-1 for the location of each switch on the UCERB 08.

Configuring the hardware switches

The UCERB 08 has two on-board switches that you set to configure the relay control logic polarity and relay power-on state. Factory-configured defalut settings are listed in Table 2-1. Refer to Figure 3-1 for the location of each switch on the UCERB 08.

Table 2-1. Default switch configuration

Board label	Description	Default setting
INVERT NON-INVERT S1	Configures the relay control logic parity per relay bank for invert or non-invert logic.	Non-invert
Pull DOWN PULL UP S2	Configures the relay power-on state per relay bank for pull-up or pull-down.	Pull down

Each DIP switch sets the configuration of one relay group. The switch labeled **CL** configures relays 1 through 4, the switch labeled **CH** configures relays 5 through 8.

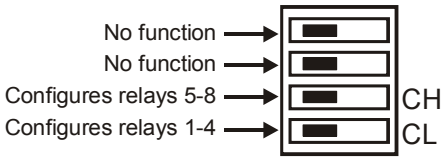


Figure 2-2. Typical board switch

Port CL consists of relays 1 through 4, and Port CH consists of relays 5 through 8.

Remove from the enclosure to access the on-board switches

To change the configuration of a switch, you must first remove the UCERB 08 from the enclosure.

Relay control logic parity

Configure the **Invert/non-invert** switch (S1) to set the relay control logic polarity for each relay bank for invert or non-invert. By default, this switch is shipped with all banks configured for non-inverted logic, as shown in Figure 2-3.

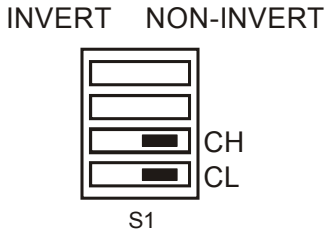


Figure 2-3. Invert/non-invert switch S1

- **NON-INVERT** mode: when "0" is written or read back via the USB bus, the relays are not energized.
- **INVERT** mode: when "0" is written or read back via the USB bus, the relays are energized.

Switch settings for polarity can be read back via software through the USB bus. Switch settings for S1 do not affect the power-on condition.

Relay power-on state

Configure the **Pull-up/pull-down** switch (S2) to set the state of each relay bank at power-up. By default, this product is shipped with the switch for all banks configured for pull-down (relays inactive at power up), as shown in Figure 2-4.

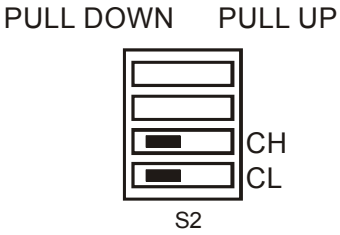


Figure 2-4. Pull-up/pull-down switch S2

When set to pull-up, the relays are put into an energized state at power-up, regardless of the state of switch S1. When set to pull-down, the relays are put into a non-energized state at power-up.

Switch settings can be read back via software through the USB bus.

Connecting the external power supply

Power to the UCERB 08 is provided with the 9 V, 1 A external power supply . You must connect the external power supply *before* connecting the USB connector to the UCERB 08.

To connect the power supply to your UCERB 08, do the following:

1. Connect the external power cord to the power connector labeled **POWER IN** on the UCERB 08 enclosure (**PWR IN** on the board). Refer to Figure 3-1 for the location of this connector.
2. Plug the AC adapter into a power outlet.

The **PWR** LED illuminates green when 9 V power is supplied to the UCERB 08. If the voltage supply is less than 6.0 V or more than 12.5 V, the PWR LED does not light.

Do not connect external power to the POWER OUT connector

The power connector labeled **POWER OUT** on the enclosure (**PWR OUT** on the board) is used to provide power to an additional CyberResearch USB DIO product. If you connect the external power supply to the **POWER OUT** connector, the UCERB 08 does not receive power, and the **PWR** LED will not illuminate.

Connecting the UCERB 08 to your system

To connect the UCERB 08 to your system, turn your computer on, and connect the USB cable to a USB port on your computer or to an external USB hub that is connected to your computer. The USB cable provides communication to the UCERB 08.

When you connect the UCERB 08 for the first time, a **Found New Hardware** popup balloon (Windows XP) or dialog (other Windows versions) opens as the UCERB 08 is detected.

When this balloon or dialog closes, the installation is complete. The **USB LED** should flash and then remain lit. This indicates that communication is established between the UCERB 08 and your computer.

If you are running Windows XP and connect the UCERB 08 to a USB 1.1 port, a balloon displays the message "**Your USB device can perform faster if you connect to a USB 2.0 port**." You can ignore this message. The UCERB 08 will function properly when connected to a USB 1.1 port.

Caution! Do not disconnect **any** device from the USB bus while the computer is communicating with the UCERB 08, or you may lose data and/or your ability to communicate with the UCERB 08.

If the LED turns off

If the LED is lit but then turns off, the computer has lost communication with the UCERB 08. To restore communication, disconnect the USB cable from the computer, and then reconnect it. This should restore communication, and the LED should turn back *on*.

Functional Details

Internal components

The UCERB 08 has the following internal components, as shown in Figure 3-1.

- Two (2) USB connectors
- Two (2) external power connectors
- PWR LED
- USB LED
- Invert/non-invert switch S1 — sets the relay control logic polarity
- Pull-up/pull-down switch S2 — sets the relay power-on state
- Screw terminals

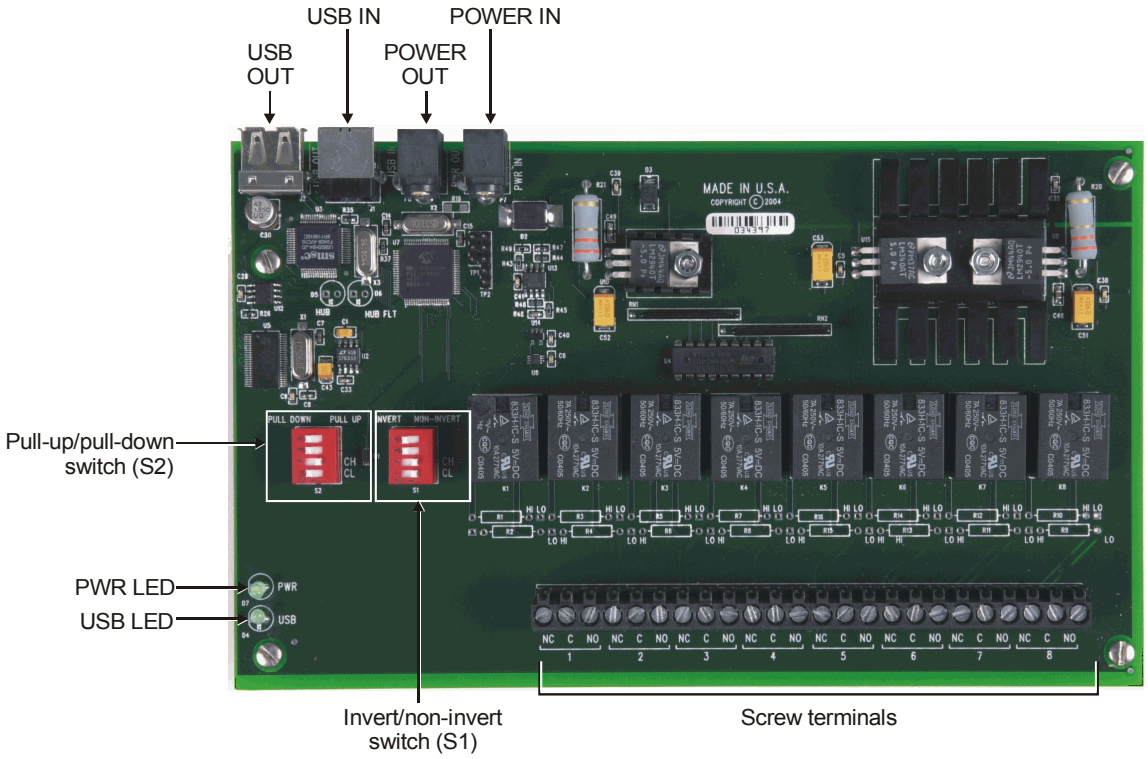


Figure 3-1. UCERB 08 components

USB in connector

The USB in connector is labeled **USB IN** on the board and enclosure. This connector is a USB 2.0 full-speed input connector that you connect to the USB port on your computer (or USB hub connected to your computer). This connector supports USB 1.1 and USB 2.0 devices.

USB out connector

The USB out connector is labeled **USB OUT** on the board and enclosure. This connector is a downstream hub output port intended for use with other CyberResearch USB DIO products only. The USB hub is self-powered, and can provide **100 mA** maximum current at 5 V.

For information on daisy chaining to other CyberResearch USB DIO products, refer to Daisy chaining additional modules to the UCERB 08 on page 3-3.

External power connectors

The UCERB 08 has two external power connectors labeled **POWER IN** and **POWER OUT** on the enclosure. The **POWER IN** connector is labeled **PWR IN** on the board, and the **POWER OUT** connector is labeled **PWR OUT** on the board.

Connect the **POWER IN** connector to the supplied +9 V external power supply. External power is required to operate the UCERB 08. The **POWER OUT** connector lets you power additional daisy chained CyberResearch USB DIO products from a single external power supply. Depending on your load requirements, daisy chained products may require a separate power supply. Refer to "Power limitations using multiple UCERB 08 devices" on page 3-4 for more information.

USB LED

The **USB** LED indicates the communication status of the UCERB 08. It uses up to 5 mA of current and cannot be disabled. Table 3-2 explains the USB LED function.

Table 3-2. USB LED Illumination

USB LED illumination	Indication
Steady green	The UCERB 08 is connected to a computer or external USB hub.
Pulsing green	Initial communication is established between the UCERB 08 and the computer, or data is being transferred.

PWR LED

The UCERB 08 incorporates an on-board voltage supervisory circuit that monitors the external 9 V power. If the input voltage falls outside of the specified range, the **PWR** LED shuts off. Table 3-3 explains the function of the PWR LED.

Table 3-3. PWR LED Illumination

PWR LED illumination	Indication
Steady green	External power is supplied to the UCERB 08.
Off	Power is not supplied by the external supply, or a power fault has occurred. A power fault occurs when the input power falls outside of the specified voltage range of the external supply (6.0 V to 12.5 V).

Invert/Non-invert switch (S1)

The Invert/non-invert switch (S1) sets the relay control logic per relay bank to either inverted or non-inverted. By default, switch S1 is configured for non-invert (see Figure 2-3).

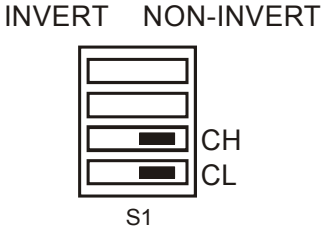


Figure 3-2. Switch S1 default configuration

The switch labeled **CL** configures relays 1 through 4, the switch labeled **CH** configures relays 5 through 8.

- **NON-INVERT**: when "0" is written or read back via the USB bus, the relays are not energized.
- **INVERT**: when "0" is written or read back via the USB bus, the relays are energized.

Switch settings do not affect the power-on condition. Use *Insta*Cal to read the current logic setting for each module group.

Pull-up/Pull-down switch (S2)

The Pull-up/pull-down switch (S2) sets the power-on state of each relay bank. By default, switch S2 is configured for pull-down (relays inactive at power-up - see Figure 3-3).

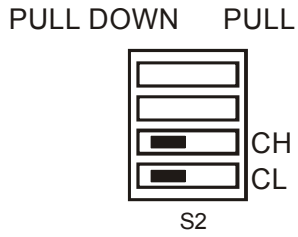


Figure 3-3. Switch S2 default configuration

The switch labeled **CL** configures relays 1 through 4, the switch labeled **CH** configures relays 5 through 8.

- **PULL UP**: The relay energizes at power-up, regardless of the state of switch S1.
- **PULL DOWN**: The relays are not energized at power-up.

Use *Insta*Cal to read the current power-on state setting for each module group.

Screw terminals

Connect external devices to the relay contacts using the UCERB 08 board's eight sets of screw terminals. Each relay has a normally closed (NC), common (C), and normally open (NO) contact. Figure 3-4 shows the screw terminals on a typical relay channel.

Figure 3-4. Typical relay channel

Each screw terminal is identified with a label on the board and on the underside of the enclosure lid.

Caution! Before connecting wires to the screw terminals, turn off the power to the UCERB 08, and make sure that the signal wires do not contain live voltages.

Wire gauge

Use 12 AWG to 22 AWG wire to connect field devices. Properly insulate the wires to avoid any short circuit to the other connections, ground, or other points on the board.

Caution! **Keep the length of stripped wire at a minimum to avoid a short to the enclosure!** When connecting your field wiring to the screw terminals, use the strip gage on the terminal strip, or strip to 5.5 - 7.0 mm (0.215" to 0.275") long.

Daisy chaining additional relays to the UCERB 08

Daisy chained products connect to the USB bus through the high-speed hub on the UCERB 08. You can daisy chain a maximum of four CyberResearch USB DIO products to a single USB 2.0 port or USB 1.1 port on your computer.

CyberResearch USB DIO products are USB 1.1 full-speed devices that provide a signaling bit rate of 12 Mb/s. The throughput rate is shared by all devices connected to the USB bus. Use the supplied cable or an equivalent cable when daisy chaining CyberResearch USB DIO products.

To daisy chain two or more UCERB 08 modules, follow the steps below. This procedure assumes you already have one UCERB 08 connected to a computer and to an external power source. The UCERB 08 already connected to the computer is referred to as the *connected module*. The UCERB 08 you want to daisy chain to the connected module is referred to as the *new module*.

1. Connect the **POWER OUT** connector on the connected module to the **POWER IN** connector on the new module.

   This step is required only if you plan to daisy chain power to another module.
2. Connect the **USB OUT** connector on the connected module to the **USB IN** connector on the new module.
3. To add another module, repeat steps 1-2, with the module you just connected now being the *connected module*.

A daisy chain example is shown in Figure 3-5. Note that the last board in the chain is supplied with external power.

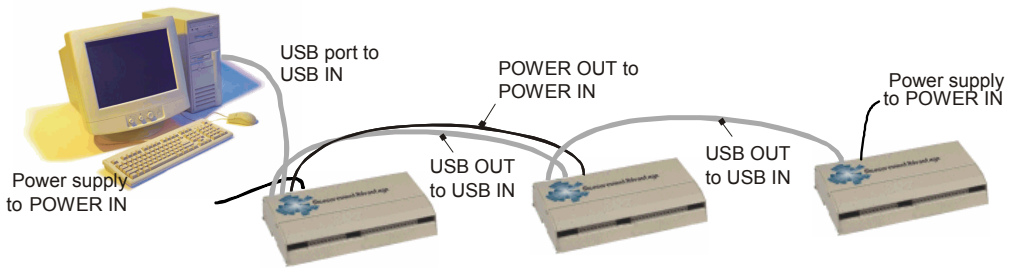


Figure 3-5. Daisy chain connections

Power limitations using multiple UCERB 08 devices

When daisy chaining additional USB data acquisition products to the UCERB 08, you must ensure that you provide adequate power to each board that you connect. The UCERB 08 is powered with a 9 VDC nominal, 1.0 A external power supply.

When connecting multiple modules, power supplies with higher current capability, are available from CyberResearch.

Voltage drop

A drop in voltage occurs with each board connected in a daisy chain system. The voltage drop between the power supply input and the daisy chain output is 0.5 V maximum. Factor in this voltage drop when you configure a daisy chain system to ensure that at least 6.0 VDC is provided to the last board in the chain.

Relay configuration

You can install a pull-up or pull-down resistor at the NO and NC terminals on each relay. Note that the pull-up resistors are tied to the 5 V power and should be considered when calculating the power budget. The relay configuration is illustrated in the following schematic.

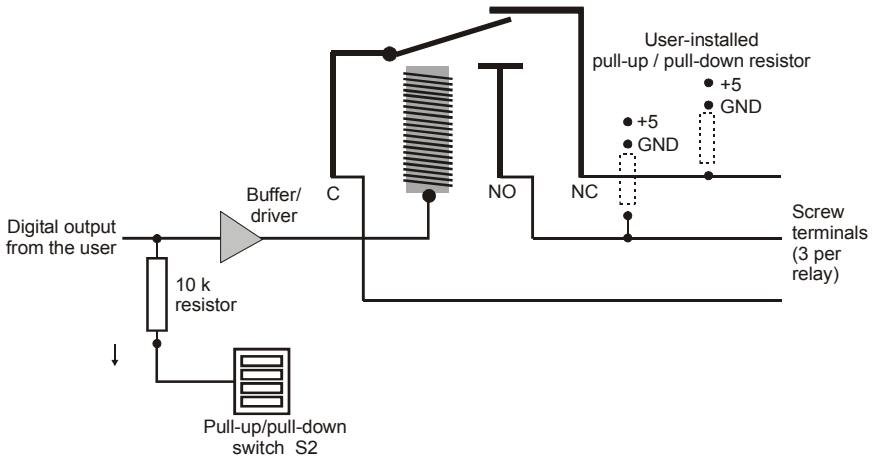


Figure 3-6. Relay configuration

The relay contacts associated that are with each relay location are listed in Table 3-4.

Table 3-4. Relay locations and associated contacts

R1, R3, R5, R7, R10, R12, R14, R16	Relays NO contact pull-up (to USB +5V) / pull-down
R2, R4, R6, R8, R9, R11, R13, R15	Relays NC contact pull-up (to USB +5V) / pull-down

Relay contact protection circuit for inductive loads

When you connect an inductive load to a relay, energy stored in the inductive load can induce a large voltage surge when you switch the relay. This voltage can severely damage the relay contacts. To limit the voltage surge across the inductive load in a DC circuit, install a kickback diode across the inductive load. Refer to the contact protection circuit in Figure 3-7. For AC loads, install a metal oxide varistor (MOV).

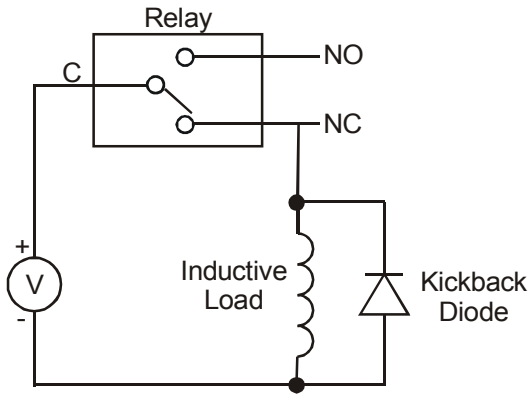


Figure 3-7. Relay contact protection circuit

Specifications

Typical for 25 °C unless otherwise specified.
Specifications in *italic text* are guaranteed by design.

Output specifications

Table 4-1. Output specifications

Number of relays		8
Relay configuration		2 banks of 4
Contact configuration		8 Form C (SPDT) Normally Open, Normally Closed and Common available at screw terminals
Contact rating		*6 A @ 240 VAC or 28 VDC resistive*
Contact resistance		100 milliohms max (initial value)
Operate time		*10 milliseconds max*
Release time		*5 milliseconds max*
Vibration		*10 to 55 Hz (amplitude 1.5 mm)*
Shock		*10 G (11 milliseconds)*
Dielectric isolation (between relay open contact)		*300 VAC, 50/60 Hz (1 minute)*
Dielectric isolation (between PCB output lines)		*500VAC, 50/60 Hz (1 minute)*
Life expectancy		*10 million mechanical operations, min*
Power on state	S2 = pull-up	Energized. NO in contact with Common
	S2 = pull-down	Not energized. NC in contact to Common
Relay control logic polarity		User-configurable per bank via switch S1 for invert or non-invert (default). Switch settings for polarity can be read back via software through the USB bus. Switch settings do not affect the power on condition. Non-invert mode: when "0" is written or read back via the USB bus, relays are not energized. Invert mode: when "0" is written or read back via the USB bus, relays are energized.
Pull-up / pull-down (controls relay power on state)		User-configurable per bank via switch S2 for pull-down (default) or pull-up. Switch settings can be read back via software. Pull-down will put the relays in non-energized mode on power up. Pull-up will put the relays in energized mode on power up.

Power

Table 4-2. Power specifications

Parameter	Conditions	Specification
USB +5 V input voltage range		4.75 V min. to 5.25 V max.
USB +5 V supply current	All modes of operation	10 mA max
External power supply (required)	Comes with UCERB 08	9 V ±10% @ 1 A
Voltage supervisor limits - PWR LED	V_{ext} < 6.0 V, V_{ext} > 12.5 V	PWR LED = Off (power fault)
	6.0 V < V_{ext} < 12.5 V	PWR LED = On
External power consumption	All relays on, 100 mA downstream hub power	750 mA typ, 850 mA max
	All relays off, 100 mA downstream hub power	170 mA typ, 200 mA max

External power input

Table 4-3. External power input specifications

Parameter	Conditions	Specification
External power input		+6.0 VDC to 12.5 VDC (9 VDC power supply included)
Voltage supervisor limits - PWR LED (Note 1)	6.0 V > Vext or Vext > 12.5 V	PWR LED = Off (power fault)
	6.0 V < Vext < 12.5 V	PWR LED = On
External power adapter (included)	Comes with UCERB 08	+9 V ±10%, @ 1 A

Note 1: The UCERB 08 monitors the external +9 V power supply voltage with a voltage supervisory circuit. If this power supply exceeds its specified limit, the PWR LED will turn off indicating a power fault condition.

External power output

Table 4-4. External power output specifications

Parameter	Conditions	Specification
External power output - current range		4.0 A max.
External power output (Note 2)	Voltage drop between power input and daisy chain power output	0.5 V max
Compatible cable(s) for daisy chain	UCERB 08	x= 2 , 3, or 6 feet

Note 2: The daisy chain power output option allows multiple USB data acquisition boards to be powered from a single external power source in a daisy chain fashion. The voltage drop between the module power supply input and the daisy chain output is 0.5 V max. Users must plan for this drop to ensure the last module in the chain will receive at least 6.0 VDC.

USB specifications

Table 4-5. USB specifications

USB "B" connector	Input
USB device type	USB 2.0 (full-speed)
Device compatibility	USB 1.1, USB 2.0
USB "A" connector	Downstream hub output port
USB hub type	Supports USB 2.0 high-speed, full-speed and low-speed operating points
	Self-powered, 100 mA max downstream VBUS capability
Compatible products	USB DIO Series
USB cable type (upstream and downstream)	*A-B cable, UL type AWM 2527 or equivalent. (min 24 AWG VBUS/GND, min 28 AWG D+/D-)*
USB cable length	3 meters max.

Relay contact pull-up/down option

Table 4-6. Relay pull-up/pull-down specifications

R1, R3, R5, R7, R10, R12, R14, R16	Relays NO contact pull-up (to USB +5V) / pull-down
R2, R4, R6, R8, R9, R11, R13, R15	Relays NC contact pull-up (to USB +5V) / pull-down

Mechanical

Table 4-7. Mechanical specifications

Card dimensions	203.2 mm (L) x 121 mm (W) x 20.0 mm (H)
	8.0" (L) x 4.8" (W) x 0.8" (H)
Enclosure dimensions	208.3 mm (L) x 132.1 mm (W) x 40.6 mm (H)
	8.2" (L) x 5.2" (W)x 1.6" (H)

Environmental

Table 4-8. Environmental specifications

Operating temperature range	0 to 70 °C
Storage temperature range	-40 to 100 °C
Humidity	0 to 95% non-condensing

Main connector

Table 4-9. Main connector specifications

Connector type	Screw terminal
Wire gauge range	12 to 22 AWG

Screw terminal pin out

Table 4-10. Screw terminal pin out

Pin	**Signal Name**
1-NC	Relay 1 Normally Closed contact
1-C	Relay 1 Common contact
1-NO	Relay 1 Normally Open contact
2-NC	Relay 2 Normally Closed contact
2-C	Relay 2 Common contact
2-NO	Relay 2 Normally Open contact
3-NC	Relay 3 Normally Closed contact
3-C	Relay 3 Common contact
3-NO	Relay 3 Normally Open contact
4-NC	Relay 4 Normally Closed contact
4-C	Relay 4 Common contact
4-NO	Relay 4 Normally Open contact
5-NC	Relay 5 Normally Closed contact
5-C	Relay 5 Common contact
5-NO	Relay 5 Normally Open contact
6-NC	Relay 6 Normally Closed contact
6-C	Relay 6 Common contact
6-NO	Relay 6 Normally Open contact
7-NC	Relay 7 Normally Closed contact
7-C	Relay 7 Common contact
7-NO	Relay 7 Normally Open contact
8-NC	Relay 8 Normally Closed contact
8-C	Relay 8 Common contact
8-NO	Relay 8 Normally Open contact

Product Service

Diagnosis and Debug

CyberResearch, Inc. maintains technical support lines staffed by experienced Applications Engineers and Technicians. There is no charge to call and we will return your call promptly if it is received while our lines are busy. Most problems encountered with data acquisition products can be solved over the phone. Signal connections and programming are the two most common sources of difficulty. CyberResearch support personnel can help you solve these problems, especially if you are prepared for the call.

To ensure your call's overall success and expediency:

1) Have the phone close to the PC so you can conveniently and quickly take action that the Applications Engineer might suggest.
2) Be prepared to open your PC, remove boards, report back-switch or jumper settings, and possibly change settings before reinstalling the modules.
3) Have a volt meter handy to take measurements of the signals you are trying to measure as well as the signals on the board, module, or power supply.
4) Isolate problem areas that are not working as you expected.
5) Have the source code to the program you are having trouble with available so that preceding and prerequisite modes can be referenced and discussed.
6) Have the manual at hand. Also have the product's utility disks and any other relevant disks nearby so programs and version numbers can be checked.

Preparation will facilitate the diagnosis procedure, save you time, and avoid repeated calls. Here are a few preliminary actions you can take before you call which may solve some of the more common problems:

1) Check the PC-bus power and any power supply signals.
2) Check the voltage level of the signal between SIGNAL HIGH and SIGNAL LOW, or SIGNAL+ and SIGNAL– . It CANNOT exceed the full scale range of the board.
3) Check the other boards in your PC or modules on the network for address and interrupt conflicts.
4) Refer to the example programs as a baseline for comparing code.

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Warranty Notice

CyberResearch, Inc. warrants that this equipment as furnished will be free from defects in material and workmanship for a period of one year from the confirmed date of purchase by the original buyer and that upon written notice of any such defect, CyberResearch, Inc. will, at its option, repair or replace the defective item under the terms of this warranty, subject to the provisions and specific exclusions listed herein.

This warranty shall not apply to equipment that has been previously repaired or altered outside our plant in any way which may, in the judgment of the manufacturer, affect its reliability. Nor will it apply if the equipment has been used in a manner exceeding or inconsistent with its specifications or if the serial number has been removed.

CyberResearch, Inc. does not assume any liability for consequential damages as a result from our products uses, and in any event our liability shall not exceed the original selling price of the equipment.

The equipment warranty shall constitute the sole and exclusive remedy of any Buyer of Seller equipment and the sole and exclusive liability of the Seller, its successors or assigns, in connection with equipment purchased and in lieu of all other warranties expressed implied or statutory, including, but not limited to, any implied warranty of merchant ability or fitness and all other obligations or liabilities of seller, its successors or assigns.

The equipment must be returned postage prepaid. Package it securely and insure it. You will be charged for parts and labor if the warranty period has expired.

Returns and RMAs

If a CyberResearch product has been diagnosed as being non-functional, is visibly damaged, or must be returned for any other reason, please call for an assigned RMA number. The RMA number is a key piece of information that lets us track and process returned merchandise with the fastest possible turnaround time.

PLEASE CALL FOR AN RMA NUMBER!

Packages returned without an RMA number will be refused!

In most cases, a returned package will be refused at the receiving dock if its contents are not known. The RMA number allows us to reference the history of returned products and determine if they are meeting your application's requirements. When you call customer service for your RMA number, you will be asked to provide information about the product you are returning, your address, and a contact person at your organization.

Please make sure that the RMA number is prominently displayed on the outside of the box.

• Thank You •

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CyberResearch, Inc.
25 Business Park Drive
Branford, CT 06405 USA
P: (203) 483-8815; F: (203) 483-9024
www.cyberresearch.com